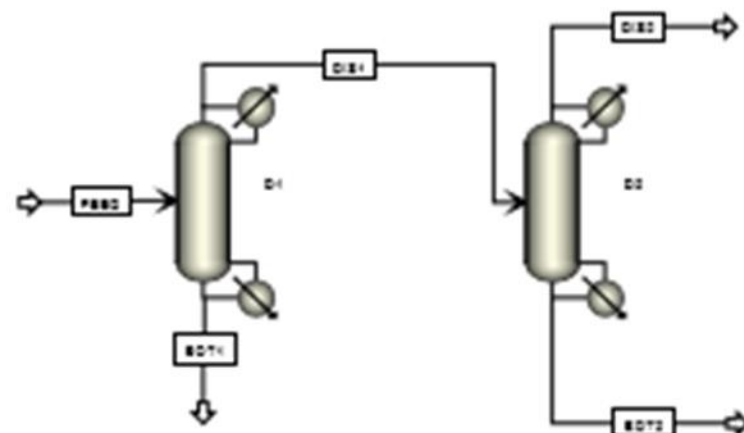


In the manufacture of higher alcohols from carbon monoxide and hydrogen, a mixture of alcohols is obtained, which must be separated into desired products. A feed mixture of:

	<u>mol%</u>
ethanol	25
n-propanol	50
iso-butanol	10
n-butanol	15

has been isolated from methanol and heavier alcohols in prior distillation steps. It is a saturated liquid at the pressure of the first distillation column, to be determined in 'a' below.



The three desired products are streams containing:

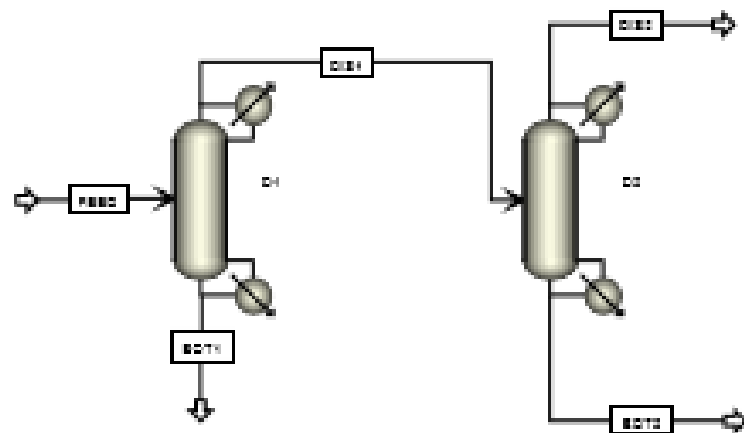
1. At least 98% of the ethanol at a purity of 98 mol%.
2. N-propanol with essentially all of the remaining ethanol and no more than 2% of the isobutanol in the feed mixture.
3. At least 98% of the iso-butanol, all of the n-butanol, and no more than 1% of the n-propanol, in the feed mixture.

Two distillation towers are used. The first receives the feed mixture. Its distillate is fed to the second tower, which produces ethanol-rich and n-propanol-rich products.

Based upon the specifications, the desired product streams are determined by material balance:

	FEED	DIS1	BOT1	DIS2	BOT2
EtOH	25.0	25.0	-	24.5	0.5
nPOH	50.0	49.5	0.5	0.5	49.0
iBOH	10.0	0.2	9.8	-	0.2
nBOH	15.0	-	15.0	-	-
Total	100.0	74.7	25.3	25.0	49.7

The column pressures are determined using the SEP2 subroutine in ASPEN PLUS with design specifications that adjust the distillate pressure to achieve distillate bubble points at 130°F. The lower bound of 20 psia to avoid vacuum operation. Note that because the most volatile species, ethanol, is present in the distillate of both towers, the pressure is adjusted to its lower bound in both towers. The results below can be reproduced using the file SEP2.EKP.



Vakumdan kaçınmak için basınç en az 20 psia olması gerektiğine dikkat ediniz